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CABERNET

Analyse the fabrication process of nettle fibres to reveal its biotechnological potential



Inspiration

The nettle, this invasive and stinging plant, found in abundance in the wild, is intriguing researchers. What if, just like its fellow plant, hemp, it could also be widely used in our textile and biocomposite industries to replace, for example, traditional glass fibres harmful to both the environment and our health? Nettles could be introduced to the heart of industrial processes and thus participate as much in reducing the dependency on petrol-derived products as in promoting a competitive low-carbon economy, as desired by the European Union.

However, at the present time, the research community only has little knowledge about this plant. But its characteristics, which give an idea of its numerous application possibilities, are starting to attract attention. This is because nettles have long, resistant fibres, making them attractive for the biocomposite market. Furthermore, in the past, they were able to prove their potential as a textile. During the Second World War, nettles were used to in the manufacturing of military uniforms, before being completely abandoned. All these observations give us an idea of the promising future of nettles at the centre of future biotechnologies.

Innovation

With CABERNET, LIST researchers aim to understand the molecular mechanisms which determine the formation of the nettle fibres. They will unlock the plant's mysteries by closely studying the whole formation process.

Thanks to their expertise, especially in the formation and remodelling of the cell wall, they will be able to carry out a long series of analyses in the growth chambers installed in their laboratories in Belvaux, Luxembourg. However, they will not be working on just any nettles. The object of their research will be a nettle plant specifically chosen by the Italian Research Council (CNR-IBIMET) for its high fibre content. They will analyse it from all angles thanks to diverse, complementary techniques, such as imagery, transcriptomics, biochemistry and the transformation of plants.

Impact

At the end of their investigations, the researchers aim not only to update the key factors involved in the fabrication of nettle fibres, but also to develop a protocol for transforming the plant, both in its entirety and at the level of its undifferentiated cells.

With CABERNET, they hope not only to reveal the plant's potential but also to promote this plant with a bad reputation. The results obtained will thus inspire new and innovative biotechnological approaches to adapt its fibres to the needs of the market.

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